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**Sent:** Thur 1/16/2014 5:35:35 PM  
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**From:** Seneca, Roy  
**Sent:** Thursday, January 16, 2014 12:32 PM  
**To:** Garvin, Shawn; Ryan, Daniel; Early, William; D'Andrea, Michael; duteau, helen; White, Terri-A; Smith, Bonnie; Sternberg, David; Heron, Donna; Hodgkiss, Kathy; Matlock, Dennis; Burns, Francis; Wright, Dave; Brown-Perry, Kinshasa; Capacasa, Jon; damm, thomas; Werner, Lora; Markiewicz, Karl; Taylor, Trish  
**Subject:** Charleston Gazette (1-16) Chemical limit in water reflects caution, limited data, CDC says

## **Chemical limit in water reflects caution, limited data, CDC says**

**By Ken Ward Jr.**

**By David Gutman**

CHARLESTON, W.Va. -- The 1 part per million threshold for acceptable levels of Crude MCHM in tap water was made using cautious, conservative estimates, but is based on very limited data and it's "almost as if we're learning as we go," officials from the federal Centers for Disease Control and Prevention said Thursday.

Late Wednesday evening the CDC sent a letter to the West Virginia Department of Health and Human Resources advising that pregnant women should not drink tap water until there is no Crude MCHM, the coal-processing chemical that spilled into the Elk River last week, detectable in the water.

On Thursday, Dr. Vikas Kapil, the chief medical officer for the CDC's National Center for Environmental Health, stressed that the change was made out of an "abundance of caution" and said that pregnant women who have been drinking the water since "do not use" orders began to be lifted on Monday should not expect adverse effects.

"We would not expect that at the levels we're talking about that we would expect any adverse health effects, either for the mom or their baby or their unborn babies," Kapil said.

He said that the change was not made because of newly discovered information.

"It's really just out of an abundance of caution, exposure during pregnancy and reproductive toxicology is a challenge," Kapil said. "We often don't have a lot of reproductive toxicology information available on those exposures."

Richard Denison, a biochemist with the Environmental Defense Fund, has been following the West Virginia situation and writing about the CDC's risk assessment efforts on his organization's blog.

Writing late Wednesday, Denison was curious about the reasoning behind the new advisory for pregnant women.

"Clearly something prompted the issuance of the advisory," Denison wrote. "This new development, I believe, lends even greater weight to the need for immediate public release of available studies and the methodology."

Kapil said that the advisory for pregnant women only applied to drinking water and that tap water below 1 part per million should still be considered safe for washing, bathing and other uses.

He also said that the advisory did not apply to women who are breastfeeding, infants or other associated populations.

The CDC's 1 part per million standard comes from two private studies from the 1990s that were done on animals.

Kapil could not say if those studies would be released publicly, but he said the CDC was working with the National Library of Medicine and other federal agencies to summarize a report of their work.

One of the studies the CDC used resulted in a figure called the No Observable Adverse Effects Level (NOAEL). That figure shows the maximum amount of chemical in which there are no biological or health effects visible in the test animals, which Kapil thought were either rats or guinea pigs.

The NOAEL for Crude MCHM was 1 milligram per kilogram of body weight, Kapil said.

To that number, toxicologists at the CDC applied three safety factors, to try to account for uncertainty.

The first safety factor accounts for the variation between animals and humans.

The second safety factor accounts for variation within humans, as some populations -- the elderly, children, those with pre-existing conditions -- could be more vulnerable.

The third safety factor accounts for how little information is available on Crude MCHM.

Each safety factor was given a weight of 10. They were multiplied by each other to produce a total safety factor of 1,000.

The NOAEL was then divided by 1,000, giving a result of 0.1 milligrams per kilogram, which works out to 1 part per million in water.

Kapil said that at every step, they used the most conservative estimates.

"Some people apply smaller factors, sometimes three, sometimes four, depending on what it is you're talking about, but we applied the highest so we feel pretty comfortable that the one part per million number is a number that would not be associated with any adverse effects for humans, based on this methodology," he said.

Asked if he would drink the water in Charleston if it was at a level of 0.9 parts per million, Kapil responded, "Absolutely. I would have no hesitation whatsoever."

But both Kapil and Tom Skinner, a CDC press officer, stressed that they did not have as much information as they would like.

"Ideally we would like to have a whole host of studies like human epidemiology studies, human toxicology studies, all of that information available to us," Kapil said. "We do have limited animal data and from that animal data we have to somehow figure out a way to extrapolate for decision-making related to these types of human exposure."

Skinner said that the CDC did not have much experience dealing with a fast-moving situation of this magnitude.

"This whole situation is very fluid, so it's almost as if we're learning as we go," he said. "This experience that we're involved with now is actually going to provide us with a lot of information to base future decisions on."

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